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Advanced Predictive Analytics Using R and Python

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We learnt!!!

- Statistics
- Predictive Analytics
- Advanced Predictive Analytics

Today's Agenda

- Introduction to Machine Learning

What is Machine learning??

- Machine learning is programming computers to optimize a performance criterion using example data or past experience.
- Learn to recognise objects
- Tens of thousands of machine learning algorithms
- Hundreds new every year
- Every machine learning algorithm has three components:
  - Representation
  - Evaluation
  - Optimization

What Machine learns!!!

- Data is cheap and abundant (data warehouses, data marts); knowledge is expensive and scarce.

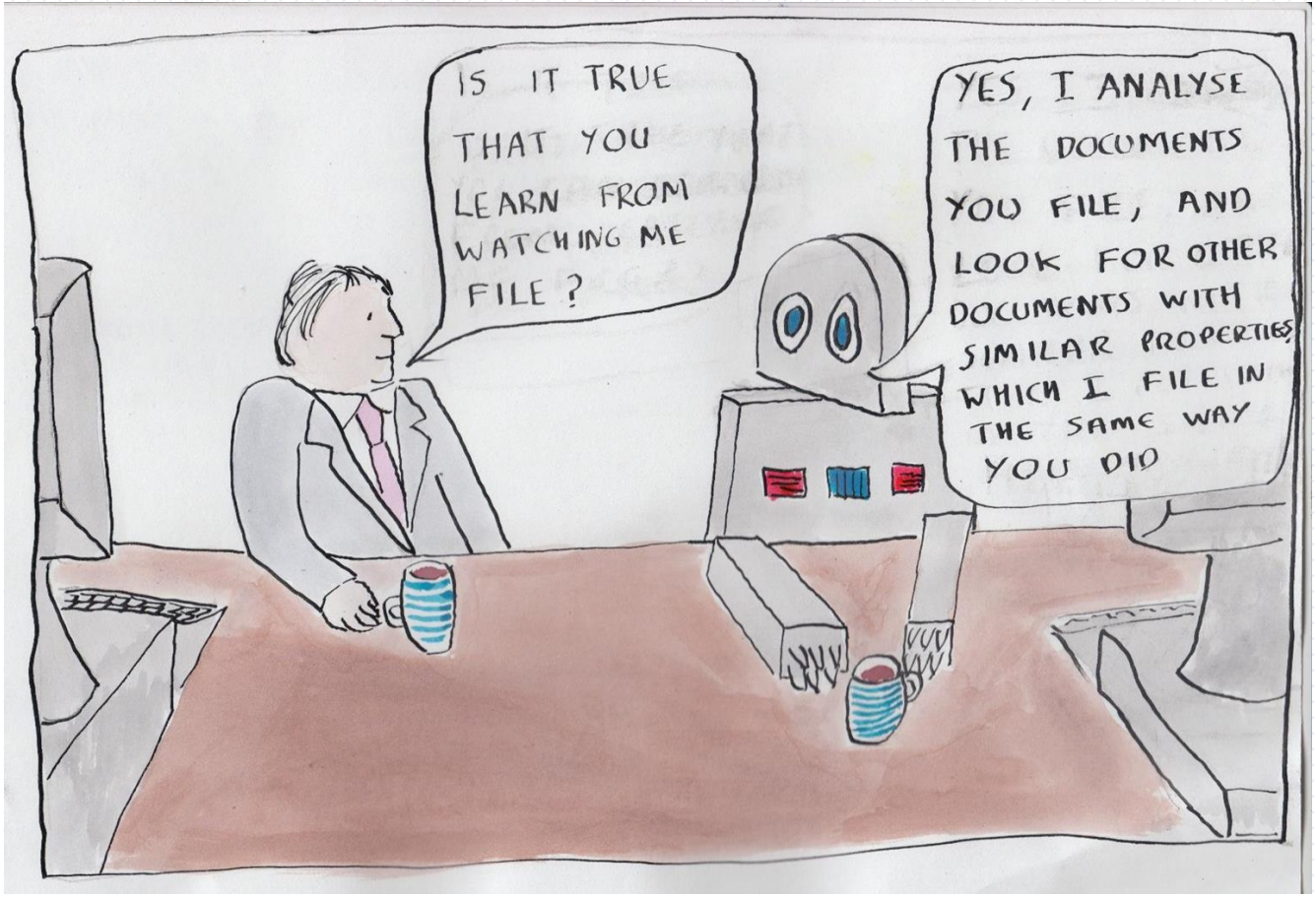
- Example in retail: Customer transactions to consumer behavior:

  People who bought “Da Vinci Code” also bought “The Five People You Meet in Heaven”

- Build a model that is a good and useful approximation to the data.

- Insights should make business sense.

This is how Machine learns from data



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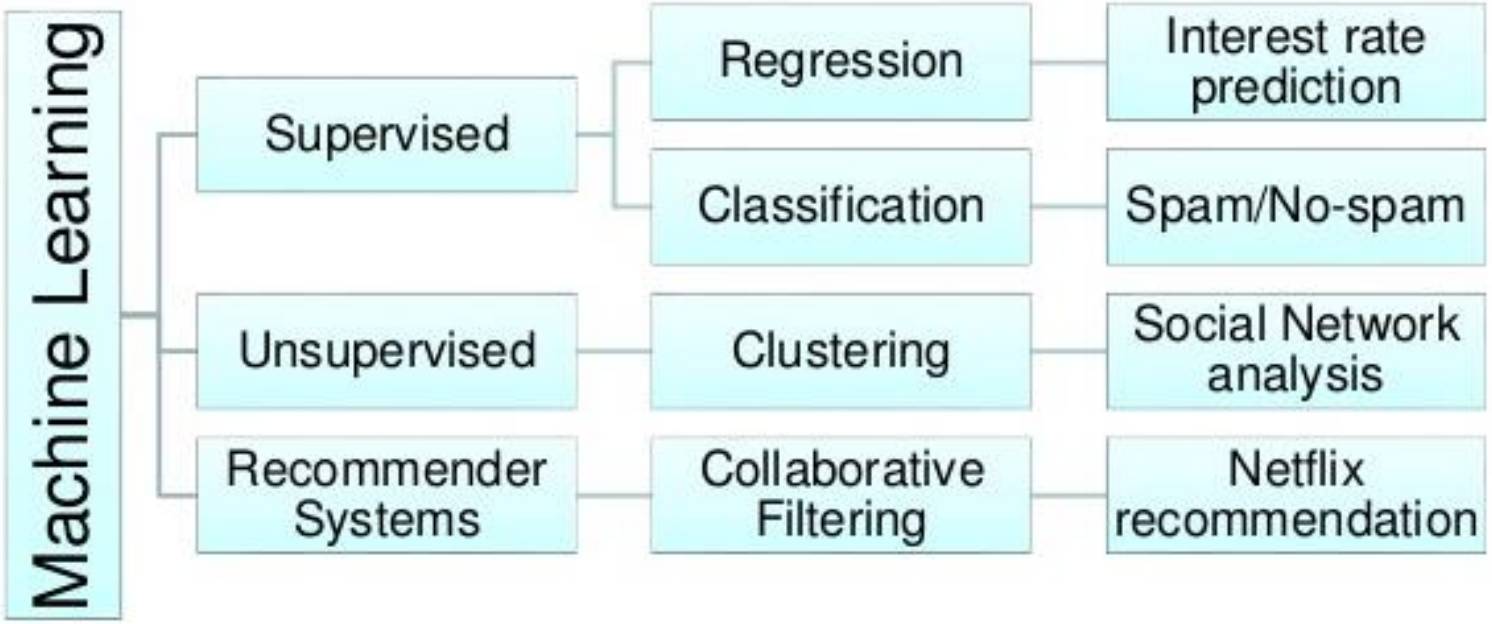
Types of Machine learning Algorithms



Supervised vs Unsupervised

Supervised

- Knowledge of output
- Learning with the presence of an expert/teacher
- Data is labelled with class or value
- Predict class or label value
- Examples: DT, Naïve Bayes, SVM, NN…

Unsupervised learning

- No knowledge of output
- Self guided learning algorithms
- Data is not labeled with class or valus
- Determine data patterns/grouping
- Examples: K-means, genetic algorithm, clustering

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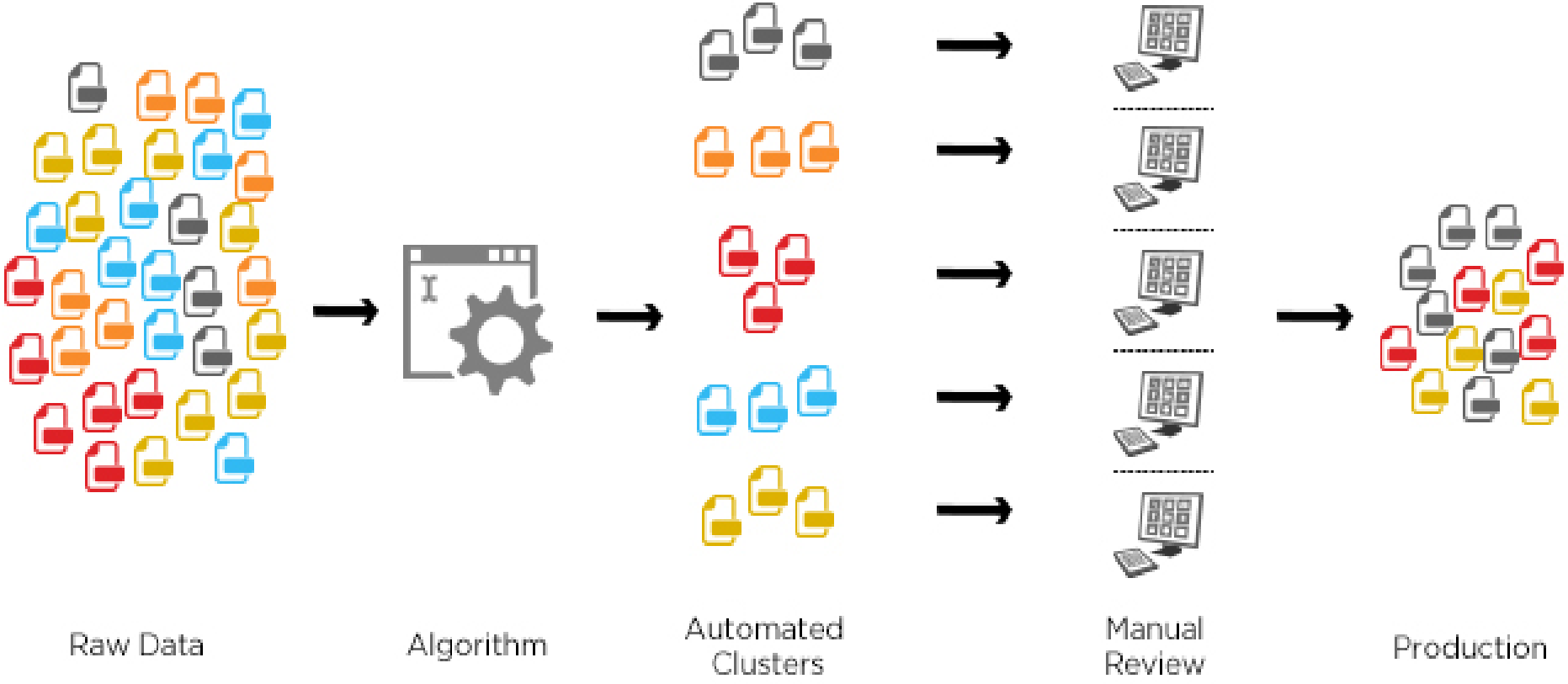
Unsupervised learning



Applications

Machine learning is preferred approach to

- Speech recognition, Natural language processing
- Computer vision
- Artificial intelligence
- Medical outcomes analysis
- Robot control
- Computational biology